

25. Marssonina Blight

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Revised from chapter by Michael E. Ostry and Arthur L. Schipper, Jr., 1989.

Hosts

Marssonina blight affects all aspen and poplar species native to North America. The disease also damages many introduced poplar species and hybrids. Poplar species in the *Populus* section are susceptible to *M. brunnea* f. sp. *trepidae*, while species in the *Aigerios* section are susceptible to *M. brunnea* f. sp. *brunnea*. *Marssonina balsamiferae* has been reported occurring on balsam poplar in Ontario and Manitoba. *Marssonina castagnei* infects white poplar and *M. populi* is commonly found on quaking aspen.

Distribution

Four species of *Marssonina* and several formae speciales (f. sp.) are found throughout their poplar hosts' ranges. International transport of infected poplar cuttings may have contributed to the spread of the pathogens.

Damage

On highly susceptible poplar clones, the blight causes premature defoliation, significantly affecting growth. In addition to leaves and petioles, the fungi also infect young stems.

Diagnosis

Leaf symptoms vary, depending upon the susceptibility of the poplar species or hybrid, the species of *Marssonina*, and the severity of disease. Look for small, brownish, circular to angular spots, 1 to 2 mm across (fig. 25.1). These spots develop on leaves in spring and early summer. The center of the spots usually appears whitish. Spots may eventually join to form large, angular, rust-brown to black necrotic blotches (fig. 25.2).

In addition to leaf spots, lesions may develop in petioles (fig. 25.3) and succulent new stem growth (fig. 25.4). These lesions enlarge longitudinally and may become several millimeters in length. Whitish masses of conidia are produced from fruit bodies (acervuli) in the center of the lesions. Conidia of *Marssonina* species are oval, hyaline, and divided by one septum into a small basal cell and a larger upper cell. They often have one or more prominent vacuoles in each cell. The size of conidia varies with species: 11 to 21 by 4 to 7 microns (*M. brunnea*) (fig. 25.5), 15 to 23 by 5 to 8 microns (*M. castagnei*), 18 to 21 by 4.5 to 5.5 microns

(*M. balsamiferae*) and 17 to 27 by 8 to 13 microns (*M. populi*). The perfect states of these fungi belong to the genus *Drepanopeziza* but are rarely seen.

Biology

Marssonina species overwinter in lesions on infected stems and on fallen leaves. In the spring during wet weather, the fungus releases ascospores (*Drepanopeziza* species) and possibly conidia, which were produced in fallen leaves or in lesions produced during the previous growing season. The spores are carried by wind and rain splash. Leaves, petioles,



Figure 25.1—Leaf spots caused by *Marssonina brunnea* on a poplar leaf. Photo by Michael E. Ostry, USDA Forest Service.



Figure 25.2—Enlarged, angular leaf spots caused by *Marssonina brunnea*. Photo by Michael E. Ostry, USDA Forest Service.

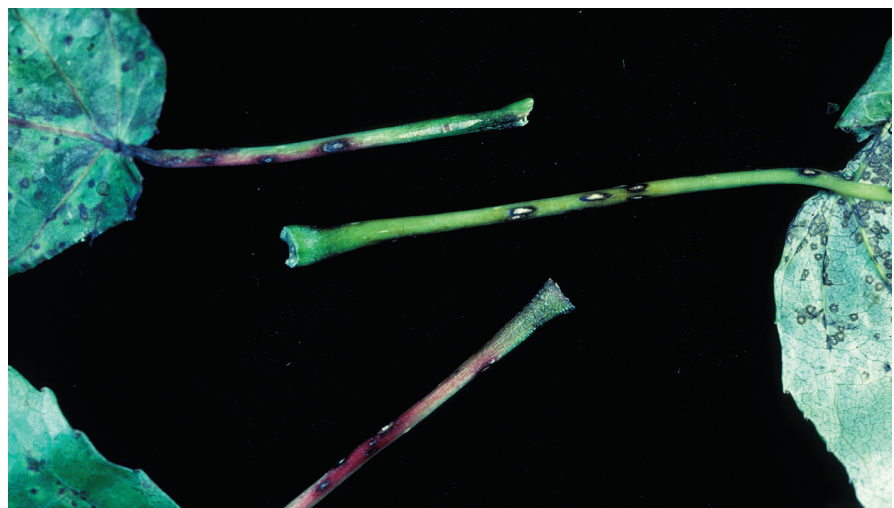


Figure 25.3—Lesions caused by *Marssonina brunnea* on petioles of poplar leaves. Photo by Michael E. Ostry, USDA Forest Service.

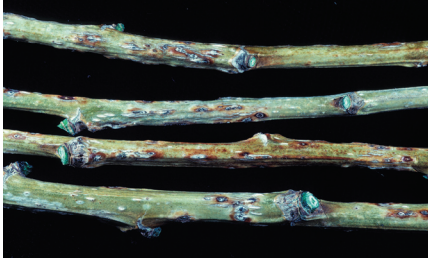


Figure 25.4—Lesions caused by *Marssonina brunnea* on poplar stems. Photo by Michael E. Ostry, USDA Forest Service.

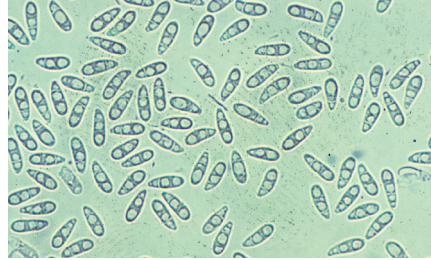


Figure 25.5—*Conidia* of *Marssonina brunnea*. Photo by Michael E. Ostry, USDA Forest Service.

and succulent stems of susceptible seedlings become infected, resulting in leaf spots and shoot lesions. Throughout the summer, conidia produced on these lesions are exuded in masses and disseminated by rain splash and wind to adjacent leaves and stems.

Control

Prevention

Several poplar species and hybrids resistant to *Marssonina* have been

identified (fig. 25.6). Planting resistant clones and preventing the movement of these fungi on infected stock are the best disease preventative measures.

Cultural

Examine nursery stock for *Marssonina* infection. Cull infected hardwood cuttings to avoid spreading the fungus on planting stock. Remove and destroy, or plow under, diseased plant debris. Reduce planting density to improve air movement. When possible, avoid overhead irrigation systems.



Figure 25.6—Leaves of poplar clones resistant (left) and susceptible to *Marssonina brunnea*. Photo by Michael E. Ostry, USDA Forest Service.

Chemical

Fungicides can be used in the nursery to control *Marssonina* blight. Apply fungicides when disease symptoms first appear and make additional applications at recommended intervals. Rotate use of fungicides with different modes of action to reduce potential development of resistant pathogens.

Selected References

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